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ABSTRACT

This study was based on the hypothesis that involvement in the dialogue of a lesson may increase students' opportunities to understand the concepts being discussed and may enlarge the teacher's opportunities to diagnose and respond to students' learning problems. Sixty teachers from the Stanford University Secondary Teacher Education Program 1969-70 participated in the training program. Two procedures to promote teacher responsiveness were formulated. One procedure trained teachers to listen and summarize student feedback for later use. This procedure consisted of two one-hour instructional tape recordings separated by a 15-minute break. The other procedure sensitized teachers to respond to student feedback "appropriately" with verbal replies and suggestions of learning activities. This procedure included a one-hour instructional program of reading, video tape reviewing, and discussion. Results of the listening skills training program showed that trainees improved their ability to recall essential points from tape recorded excerpts. There were no significant differences between the groups receiving response appropriateness training and the groups that did not receive such training. Responsive behavior may be more relevant when the teacher can attune himself to each student's academic and personal needs. (MJM)

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A STUDY OF BEHAVIORAL RESPONSIVENESS IN TEACHERS' VERBAL INTERACTIONS WITH STUDENTS

The Problem

Recent technical innovations for instructional presentation may increase teachers' opportunities to interact with students in uniquely human ways. It is therefore important to investigate means of improving teachers' abilities to use these opportunities constructively to help students reach the lesson objectives.

The study reported here concerned teachers' "Responsiveness" to student ideas expressed during discussions in small classroom groups. Responsiveness is defined as the ability to listen carefully to what students say and to respond in an appropriate cognitive and affective manner. Responsiveness in verbal interactions reflects the teacher's concern for establishing a reciprocal encounter with students. The hypothesis was that involvement in the dialogue of a lesson may increase students' opportunities to understand the concepts being discussed and may enlarge the teacher's opportunity to diagnose and respond to students' learning problems.

Experimental Treatment

Two training procedures for promoting teacher responsiveness to student comments formed the basis for the experiment.

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One procedure trained teachers to listen and summarize student feedback for later use. Listening thoughtfully and effectively to student communications is deemed important because it enables a teacher to retain the main points of student statements and questions. The listening training program consists of two one-hour instructional tape recordings separated by a fifteen minute break. The program stresses selection and retention of essential facts from recorded excerpts of speakers in various roles and situations.

The other procedure sensitized teachers to respond to student feedback "appropriately" with verbal replies and suggestions of learning activities which may help to clarify and to extend students' understanding of the concept being discussed. Appropriate responses were defined as a teacher's efforts to be both more effective and more efficient in terms of student learning and satisfaction. In order to increase trainees' understanding of response appropriateness, a one-hour instructional program of reading, videotape viewing, and discussion was prepared. It was designed to sensitize trainees to the nature and importance of response appropriate behavior.

Taken together, listening and response appropriate behaviors can be defined as showing observable concentration on the content and intent of student verbal behavior, followed by a verbal reply which demonstrates some effort to understand and reply to the explicit and implicit meaning of the student's comment or question. The response of the teacher may be an answer, a question, an elaboration, or a reinterpretation of his previous statement or question. The skills of careful listening and appropriate responding are complementary, but were separated in this study so that their relative effectiveness as training techniques for producing responsiveness could be assessed. Responsiveness is thus represented as follows: Responsiveness = Listening + Response Appropriateness.

The Dependent Variable

Pre- and posttests for listening training and for response appropriateness training were administered to compare trainees' abilities prior to and after training. From these comparisons the relative effectiveness of each training procedure was assessed.

Classroom discussions were videotaped and later coded by two raters to determine whether responsiveness training had a differential effect on trainees' classroom behavior. Teacher-student interaction was coded according to the "OScAR 5V" (Observation Schedule and Record, Form 5, Verbal) Classroom Interaction Analysis Instrument, whose categories reflect the nature of pupil and teacher verbal behavior during a small classroom discussion. Specific pupil and teacher behaviors were used to reflect changes in pupil and teacher behavior as a result of experimental training for teachers. Total ratings for each OScAR category for each of the four discussion sessions were obtained. These totals were made for the different experimental groups and then analyzed to test the hypotheses. Frequencies of occurences of the categories had been hypothesized to either increase or decrease after training.

The Hypotheses

The following primary hypotheses were tested in the study:

Teachers who receive listening training and response appropriateness training (Group LR) will be more responsive in verbal interactions with students on posttests than teachers who receive listening training only (Group L), response appropriateness training only (Group R), or no training (Group C). Teachers who receive response appropriateness training (Group R) will be more responsive than those who receive listening training (Group L). Group C will show the least responsiveness of any group on post tests.

Specific hypotheses: It was hypothesized that after listening and response appropriateness training:

1. Students will make more statements and ask more questions not specifically related to the concepts being discussed.

2. Students will ask for more substantive information.

3. Students will offer more substantive information.

4. Students will respond more often in a direct manner to other students or indirectly to the teacher.

5. Teachers will raise more substantive questions or set more problems (without indicating who is to answer them).

6. Teachers will direct more questions to the same students who answered the questions preceding them.

7. Teachers will direct more questions to students whose answers depend on the preceding one.

8. Teachers will ask students more questions to which more than one answer may be acceptable or correct.

9. Incidence of teachers not replying to student utterances will decrease.

10. There will be more teacher utterances with positive affect.

11. Teachers will give more information or positive feedback.

12. Teachers will accept more student responses, or make statements not otherwise classifiable.

13. Teachers will give fewer commands for students to do something or give less negative feedback.

Experimental Design and Procedure

The experiment used a two by two design to investigate the effects of various training procedures of Listening and Response Appropriate training on the

subsequent teacher-student verbal interaction in a discussion. Treatment groups were stratified by subject matter (English, social studies, science, mathematics) and teachers were randomly assigned to the groups. Teachers conducted two fifteen-minute discussions before training and two discussions after training. The following experimental design was used in the study, where 0 = a discussion session and x = a pre or post training test. Analyses of training effects were made using data gathered from each of the four discussion sessions.

0_1	0_2	$x^L x$	0_3	0_4
0_1	0_2	$x^{LR} x$	0_3	0_4
0_3	0_3	$x^R x$	0_3	0_4
0_3	0_3	$x^C x$	0_3	0_4

Fig. 1 Experimental Design of the Study

To assess the effect of different combinations of training methods, subjects were randomly assigned to one of four treatment groups: training in Listening alone (L), training in Listening and Response Appropriateness (LR), training in Response Appropriateness alone (R), and the Control group (C).

Sixty teachers from the Stanford University Secondary Teacher Education Program, 1969-70, participated in the study during the initial summer of a twelve month post-bachelor degree training program. Trainees led four weekly fifteen-minute discussions made up of four to seven high school pupils in each session. The students were randomly assigned to the discussions and as far as possible, attended the same discussions each week. Students ranged from ninth to twelfth grade and came from a cross section of socio-economic levels. Topics for the discussions were pre-selected to give trainees latitude in planning the specific lessons and still provide comparable discussions for analysis.

Results

The effects of listening training on subjects' ability to summarize and retain information from recorded excerpts were first assessed using analysis of variance on posttest scores (Table 1). The results show an overall difference between group means. Individual group comparisons showed that there were significant differences between Groups L and C ($p < .01$), and between Groups LR and C ($p < .01$). There were no significant differences between Groups LR and R ($p > .05$). After assumptions about the slope and parallel nature of the regression lines were checked, analysis of covariance was used to assess the training effects with adjustment for prior differences in listening ability. Pre-test scores were used as covariates. Using adjusted posttest means, significant differences were found between Groups L and C ($p < .01$), and between Groups LR and C ($p < .01$). No significant differences were found between Groups LR and L (see Table 2).

Analyses were performed on the response appropriateness training scores to determine the effects of the training on trainees' understanding of the concept. The slopes of the regression lines were not significantly different from zero, but were significantly different from one another, so analysis of covariance was not used. Using analysis of variance, the groups did not differ significantly (Table 3).

Analysis of Classroom Variables: The major hypothesis of this study was that teachers who receive training in ways to listen more carefully to student feedback and to respond to such feedback will be more responsive in verbal interactions with students, as measured by several categories of the OScAR 5V instrument. First, analysis of variance was used to assess differences in pre-training skill levels for the various OScAR 5V categories. Comparison of groups receiving listening training showed significant differences on categories seven (Teacher directs question to pupil whose answer depends on the previous one), and eight (Teacher asks pupil a question to which more than one answer may be

Table 1

ANALYSIS OF VARIANCE ON LISTENING TRAINING[1]

Source of Variation	SS	df	MS	F
Group[2]	13396.25	2	6698.125	10.7*
Error	28655.43	33	625.90	

* p .01

1 Newman Keuls test comparisons indicated that there were significant differences between Group L and Group C ($q=5.80$ where $q < .01_{3, 33}=4.43$), and between Group LR and Group C ($q=5.07$ where $q < .01_{2, 33}=3.87$). There was no significant difference between Group LR and Group L ($q=.75$ where $q < .05_{2, 33}=2.88$).

2 Three groups were compared: LR, L, and C.

Table 2

ANALYSIS OF COVARIANCE ON LISTENING TRAINING[1]

Source of Variation	SS	df	MS	F
Group[2]	14813.5	2	7406.7	13.9*
COVS	3606.38	1	3606.38	6.76
Error	17049.06	32	532.78	

* p .01

1 Newman Keuls test comparisons of adjusted means indicated that there were significant differences between Group L and Group C ($q=6.13$ where $q < .01_{3, 32}=4.44$) and between Group LR and Group C ($q=7.37$ where $q < .01_{2, 32}=3.89$). There was no significant difference between Group LR and Group L ($q=1.25$ where $q < .05_{2, 32}=2.89$).

2 Three groups were compared: LR, L, and C.

Table 3

ANALYSIS OF VARIANCE ON RESPONSE APPROPRIATENESS TRAINING

Source of Variation	SS	df	MS	F
Group	5.08	2	3.52	2.07
Error	62.71	37	1.69	

acceptable). Since randomization was used, the bases of these significant differences is not known. However, with thirteen variables, it might be expected that about one significant difference would appear by chance, using the .05 level. Thus, it does not appear that differences in pre-training skill levels significantly affected the interpretations of posttest results. Finally, results were examined using analysis of variance on post-training pupil and teacher dependent variables. There were three of thirteen variables showing significant differences among various training procedures:

Variable 1 (Students making more statements and asking more questions not specifically related to the concepts being discussed): As shown in Figure 1, these results were probably due to the relative increase in the control group frequency as compared with the frequencies in the other groups.

Pre-Training

	No Listening Training	L
No R Training	1.15	1.00
R	.53	.85

Post-Training

	No Listening Training	L
No R Training	2.79	.70
R	.57	1.00

Fig. 1

Variable 7 (Teachers directing more questions to students whose answers depend on the preceding one): Figure 2 shows a situation similar to that of variable 1. The control group mean for the post-training scores decreased, as did the means for Group LR and Group L. There was a small increase for Group R. The overall decrease in means, along with the small frequency of ratings qualify the value of any of these changes.

Pre-Training

	No L Training	L
No R Training	1.54	3.04
R	3.83	3.84

Post-Training

	No L Training	L
No R Training	.92	3.08
R	1.33	2.57

Fig. 2

Variable 5 (Teachers raising more substantive questions or setting more problems, without indicating who is to answer them): As shown in Figure 3, these results may have been affected by the decrease in total frequencies of the behavior for the control group. Though Group L was significantly higher than Group C, frequencies of this behavior actually decreased after training, indicating that listening training did not improve responsiveness. Frequencies of category five did increase for Group R, but decreased for Group LR, indicating that responsive training alone may increase teachers' responsiveness but that listening training affected teachers in the Group LR as it did in Group L, possibly being a stronger influence on teachers than response appropriateness training.

Pre-Training

	No L Training	L
No R Training	318.9	358.8
R	311.7	381.2

Post-Training

	No L Training	L
No R Training	258.0	318.3
R	345.7	327.3

Fig. 3

Discussion

Analyses of dependent variables relating to direct training effects showed that trainees who were given the listening skills training program improved their ability to recall essential points from tape recorded excerpts. Results also

showed that there were no significant differences between the groups receiving response appropriateness training and the groups that did not receive such training. Item analysis of posttest results of this training indicated that the trainees may not have seen responsive behavior as crucial to classroom interaction, or that they did not understand the essential nature of responsiveness. The item analysis indicated an assumption of many trainees that responsiveness is to be equated with nurturant teacher behavior. For example, very few trainees felt that lecturing could be an appropriate response. The general reaction was to equate responsiveness with some specific, positive teacher behavior rather than with the decision process of selecting the most appropriate behavior for the situation.

Analysis of pupil and teacher behavior categories showed that after training procedures in listening and in response appropriateness skills, only three of the thirteen categories showed significant differences between groups on the posttest, and the nature of effects for two of these categories made importance of these differences questionable.

A basic assumption of this study was that teachers would consider responsiveness important to successful classroom interaction with students. However, as the item analysis of the pre- and post response appropriateness training tests indicated, subjects may not have understood the actual nature of responsiveness, or may not have considered it a behavior that requires more attention and effort than a general disposition to be considerate and supportive. A study by Bush (1954) indicated that teachers may not adequately use the student feedback available to them to select ways in which they can best assist students. In a study of several high schools and 650 students, Bush found that teachers' knowledge about their pupils was not correlated with satisfactoriness of interpersonal relations between teachers and students. This would indicate that attention to

students' frames of reference during interaction is not helped much by prior knowledge of the students. The study also indicated that the knowledge teachers do have about students may be selective, thereby further reducing teachers' sensitivity to feedback from verbal interaction with students. Therefore, it may be necessary to broaden responsiveness training so that teachers can be trained to use the knowledge that they already have about their students. Such utilization of prior knowledge of their students may be necessary before responsiveness training can be effective. Responsiveness behavior may be more relevant and consequential when the teacher can attune himself to each student's particular academic and personal needs.